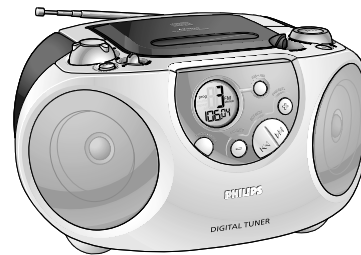


Service  
Service  
**Service**



# Service Manual



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Published by YT 0309 Service Audio Printed in The Netherlands Subject to modification

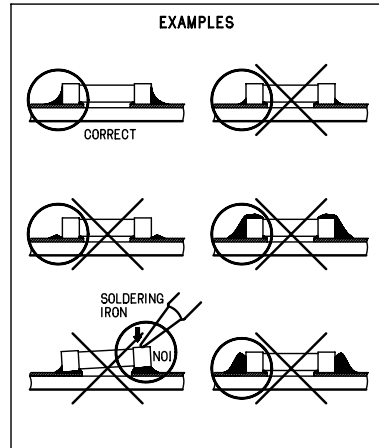
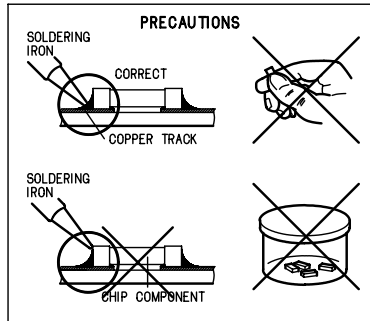
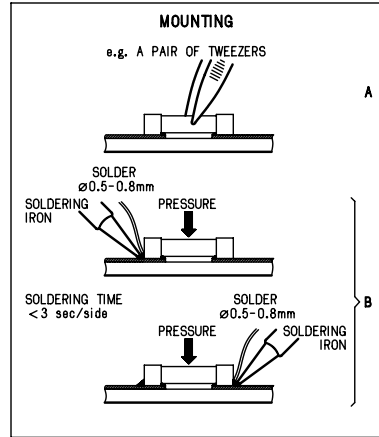
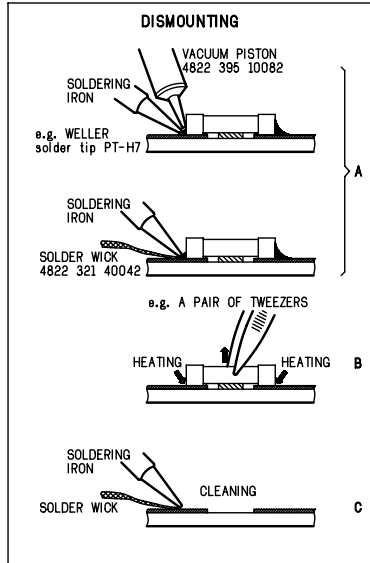
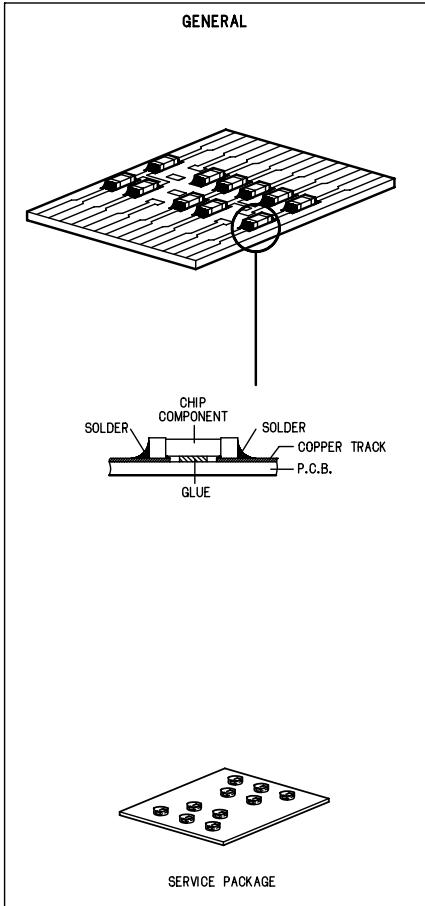


GB 3140 785 32410



# PHILIPS

# HANDLING CHIP COMPONENTS



**GB WARNING**

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.



**NL WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**F ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet serfi d'une résistance de sécurité. Veillez à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**D WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

**I AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialeto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**GB**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used. Safety components are marked by the symbol ▲

**F**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées. Les composants de sécurité sont marqués ▲

**SAFETY**



**D**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden. Sicherheitsbauteile sind durch das Symbol ▲ markiert.

**NL**

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast. De Veiligheidsonderdelen zijn aangeduid met het symbool ▲

**I**

Le norme di sicurezza estigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati. Componenti di sicurezza sono marcati con ▲

**GB DANGER:** Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

**S Varning !** Osynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

**DK Advarsel !** Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for strålning.



**FIN Varoitus !** Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

**GB** After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists. The leakage current must not exceed 0.5mA.

**F** "Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

## TECHNICAL SPECIFICATIONS

### GENERAL

Mains voltage	-/00C : 230 V
	-/05 : 240V
Mains frequency	-/00C/05 : 50 Hz
Battery	main set : 9 V (R14 x 6)
Power consumption	: < 20 W (max.)
Dimension (W x H x D)	: 294 x 145 x 245 mm
Weight	: 2.4 Kg

### AMPLIFIER

Output power	mains : 2 x 1 W
	battery : 2 x 1 W
Speaker impedance	: 2 x 8 ohm
Frequency response	: 100 Hz - 10 kHz ( $\pm 3$ dB)

### COMPACT DISC

Frequency response	: 100 Hz - 10 kHz $\pm 2$ dB
S/N ratio	: 60 dB
Channel difference	1 kHz : 2 dB
Channel crosstalk	1 kHz : 40 dB
Laser wavelength	: 780 $\pm$ 20 nm
Laser light power	: < 0.5 mW

### TUNER - FM SECTION

Tuning range	: 87.5 - 108 MHz
IF frequency	: 10.7 MHz $\pm$ 0.2 MHz
Sensitivity	: 20 dBf at 26dB S/N
Selectivity	: 30 dB at 300kHz
IF rejection	: 50 dB
Image rejection	: 20 dB
Crosstalk	: 20 dB

### TUNER - AM SECTION

Tuning range	MW : 531 - 1602 kHz
IF frequency	: 450 kHz $\pm$ 1 kHz
Sensitivity	MW : 4500 $\mu$ V/m at 26dB S/N
Selectivity	MW : 16 dB
IF rejection	MW : 60 dB
Image rejection	MW : 28 dB

## SERVICE TOOLS

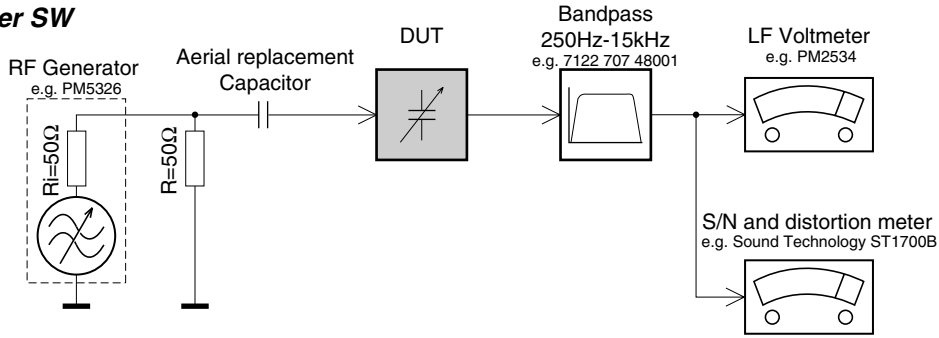
<b>Audio signal disc</b> SBC 429.....	4822 397 30184
<b>Playability test disc</b> SBC 444.....	4822 397 30245
<b>Test disc 5</b> (disc without errors) +	
<b>Test disc 5A</b> (disc with dropout errors, black spots and fingerprints)	
SBC 426/426A.....	4822 397 30096
<b>Burn in test disc</b> (65 min. 1kHz signal at -30 dB level without "pause").....	4822 397 30155

## AVAILABLE ESD PROTECTION EQUIPMENT

<b>anti-static table mat</b> large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25m	4822 466 10958
<b>anti-static wristband</b>	4822 395 10223
<b>connection box</b> (3 press stud connections, 1M $\Omega$ )	4822 320 11307
<b>extendible cable</b> (2m, 2M $\Omega$ , to connect wristband to connection box)	4822 320 11305
<b>connecting cable</b> (3m, 2M $\Omega$ , to connect table mat to connection box)	4822 320 11306
<b>earth cable</b> (1M $\Omega$ , to connect any product to mat or to connection box)	4822 320 11308
<b>KIT ESD3</b> (combining all 6 prior products - small table mat)	4822 310 10671
<b>wristband tester</b>	4822 344 13999

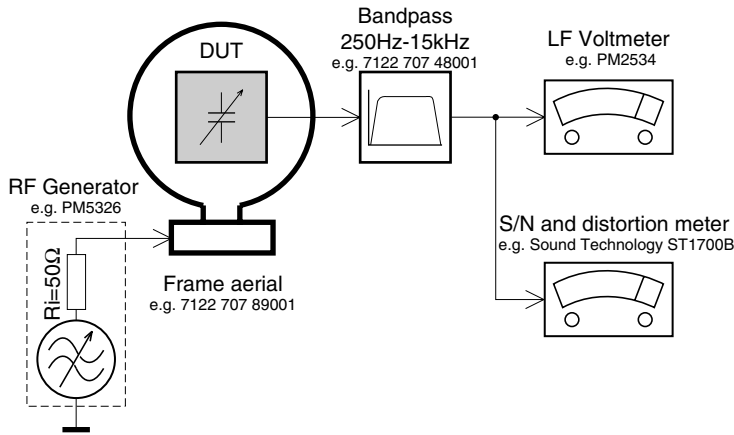
## SERVICE MEASUREMENT

### Tuner SW



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday«s cage. Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

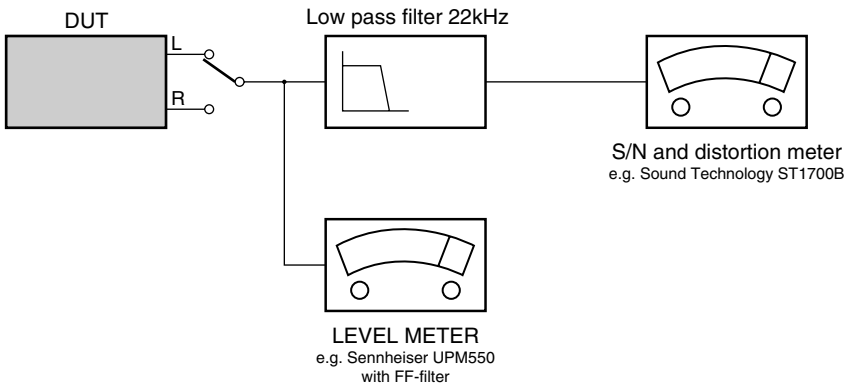
### Tuner AM (MW,LW)



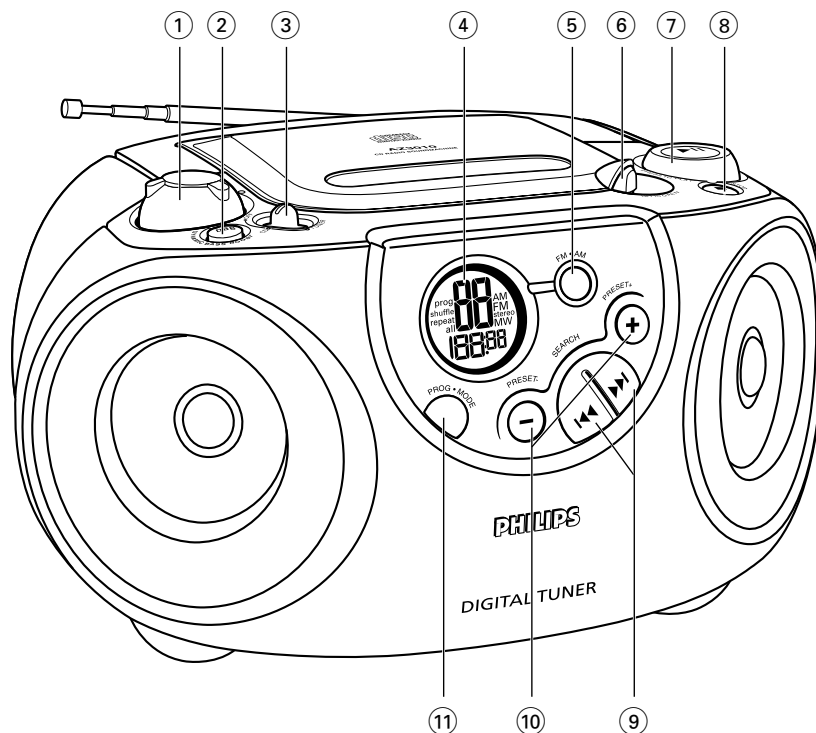
To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday«s cage.

### CD




Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)  
L.P.F. = 13<sup>th</sup> order filter 4822 395 30204

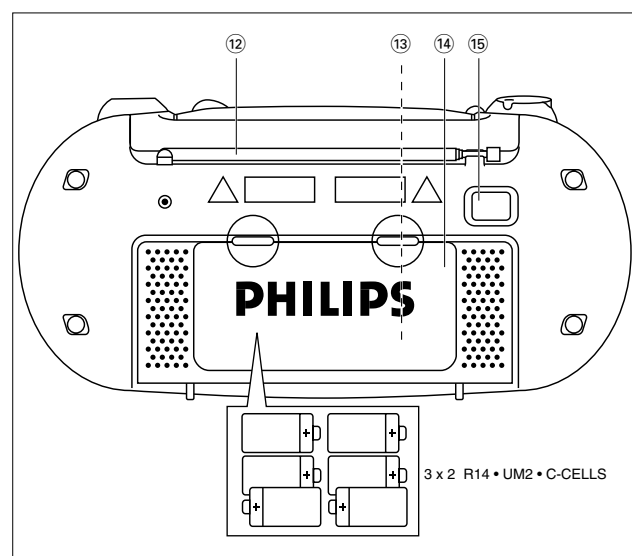


## CONNECTIONS AND CONTROLS



### Top and front panels (See 1)

- ① **VOLUME**  
– adjusts volume level
- ② **DBB** (Dynamic Bass Boost)  
– enhances bass response
- ③ **Source selector**  
– selects source of sound CD or TUNER. Also the power off switch
- ④ **Display**  
– shows the CD and tuner functions
- ⑤ **FM•MW (AM)**  
– selects FM/ MW (AM) waveband
- ⑥ **LIFT TO OPEN**  
– opens/ closes the CD door
- ⑦ **PRESS TO PLAY**   
– starts or pauses CD play
- ⑧ **STOP**   
– stops CD playback; erases a CD programme
- ⑨ **SEARCH**   
CD: skips or searches a passage/track backwards or forward  
Tuner: tunes to a station (up, down)
- ⑩ **PRESET +, –**  
– selects a preset station (up, down)
- ⑪ **PROG MODE**  
CD: – programmes and reviews programmed track numbers;  
– plays tracks CD/ programme in random order;  
– repeats a track/CD/ programme  
Tuner: – programmes preset stations

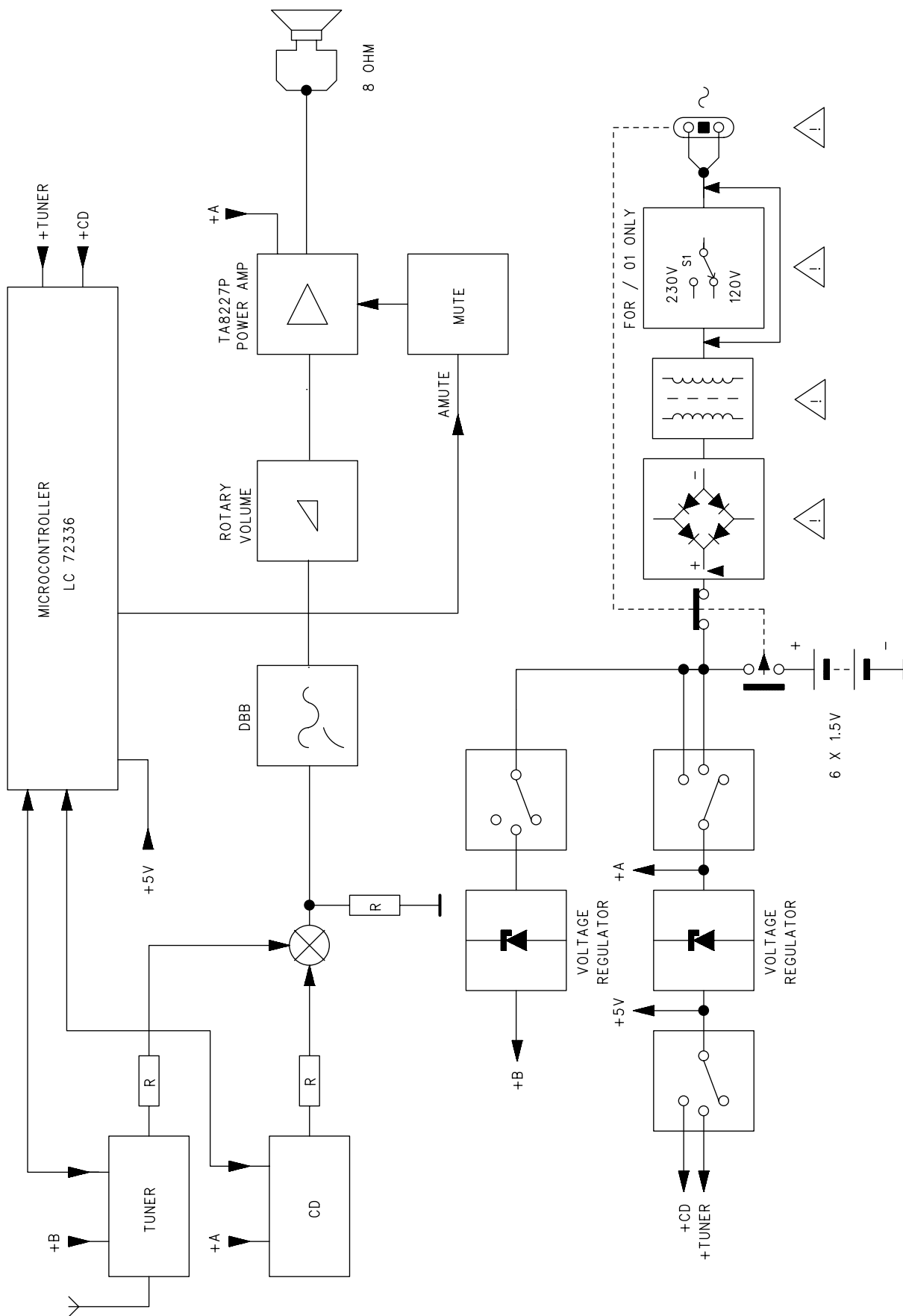


### Back Panel (See 1)

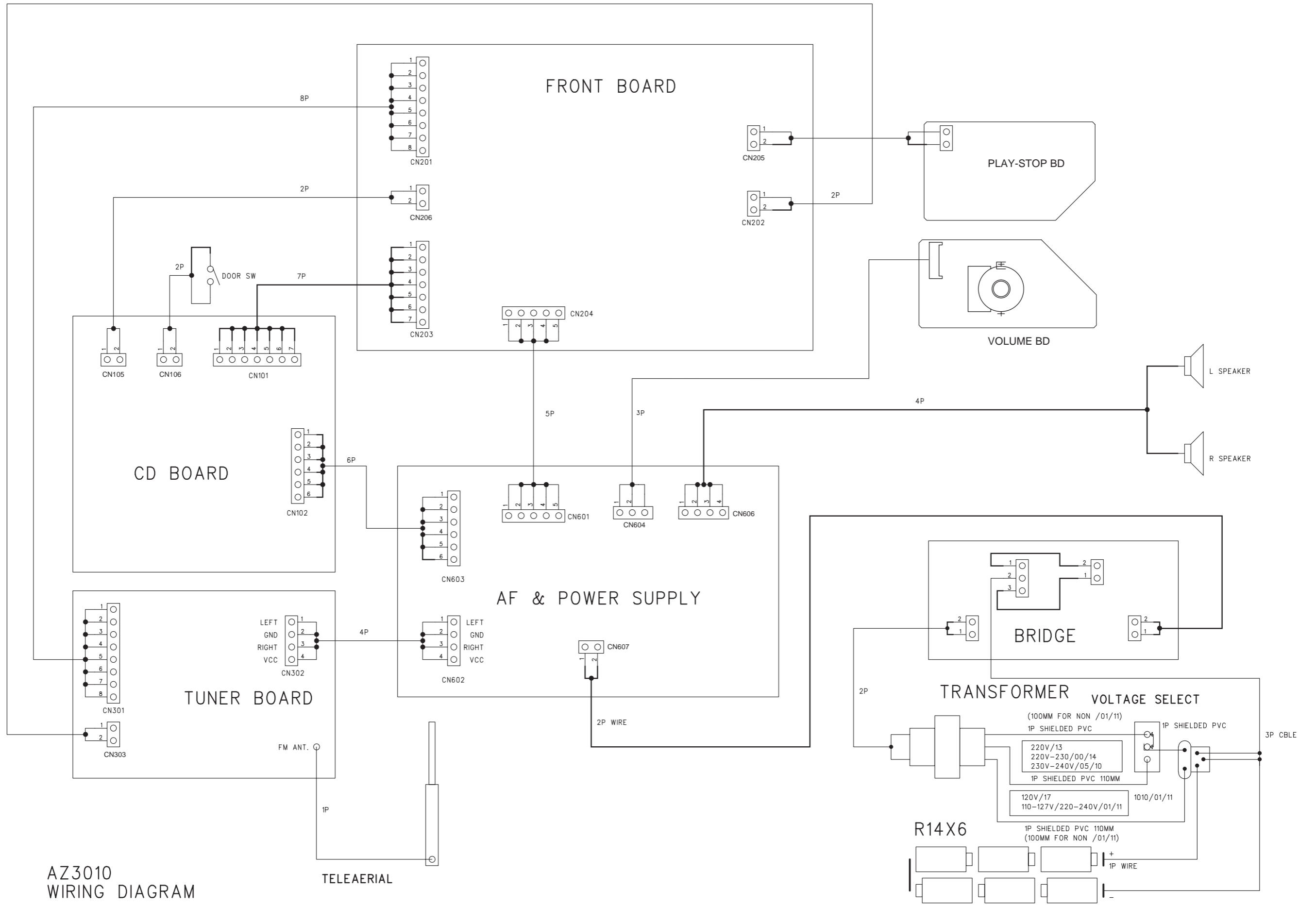
- ⑫ **Telescopic aerial**  
– to improve FM reception
- ⑬ **Voltage selector** (*inside battery compartment, some versions only*)  
– adjust to match the local voltage 110/220V before plugging in the set
- ⑭ **Battery door**  
– to open battery compartment
- ⑮ **AC MAINS**  
– inlet for mains lead

For more detail on operation instruction please visit Philips Audio internet site :  
<http://www.audio.philips.com>

# AZ301x /ALL BLOCK DIAGRAM

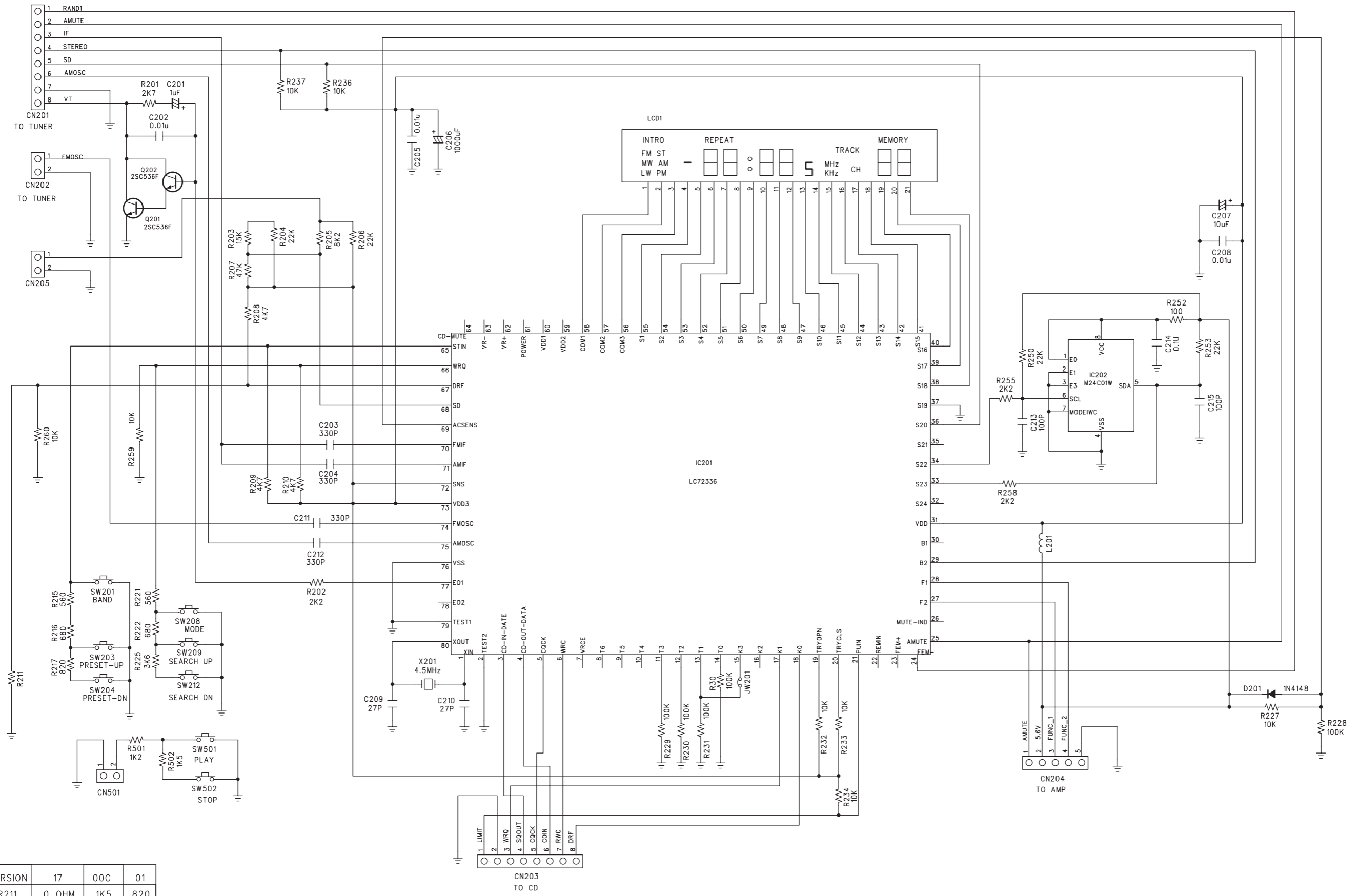


# WIRING DIAGRAM



AZ3010 WIRING DIAGRAM

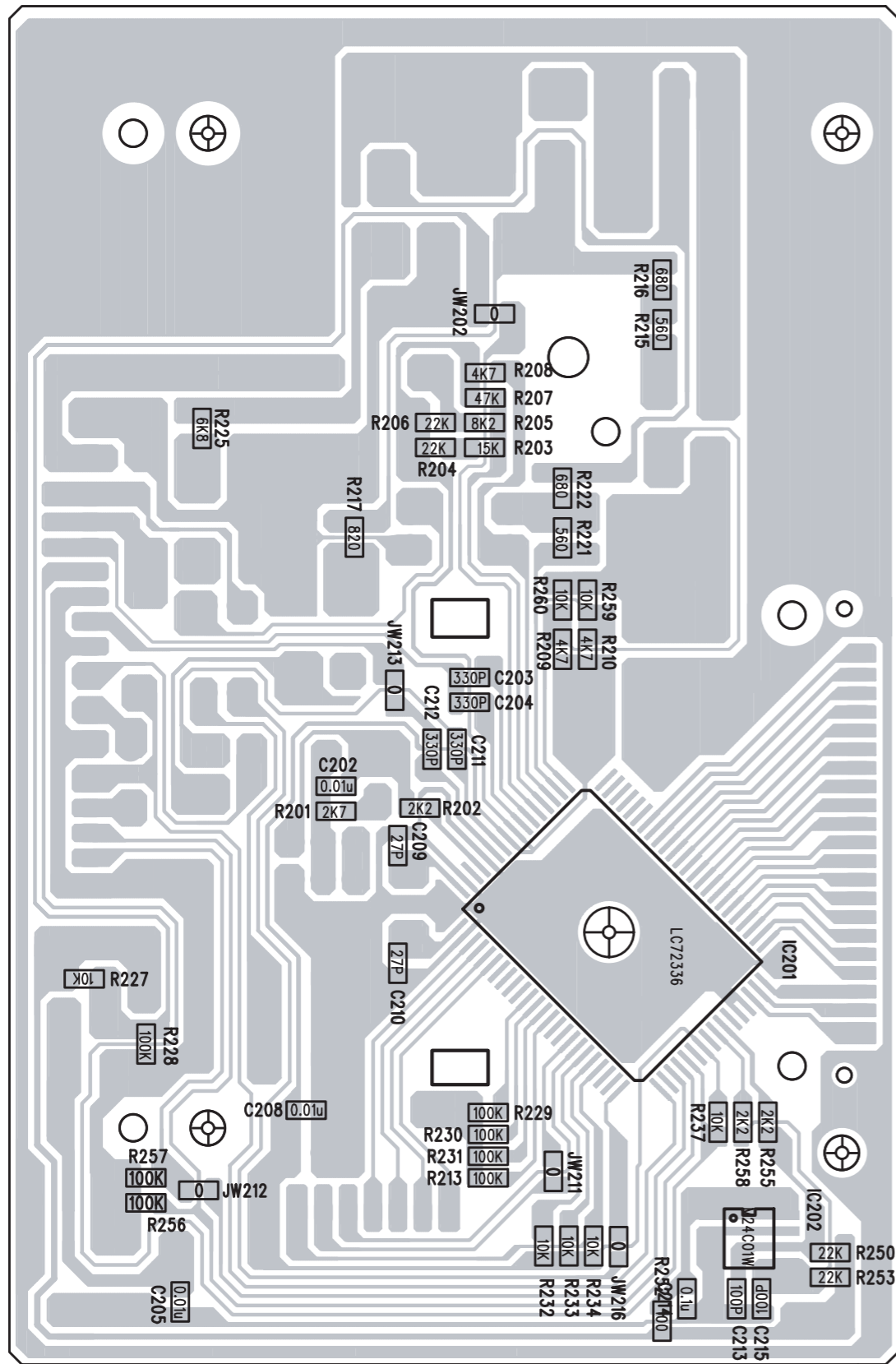
NT BOARD - CIRCUIT DIAGRAM



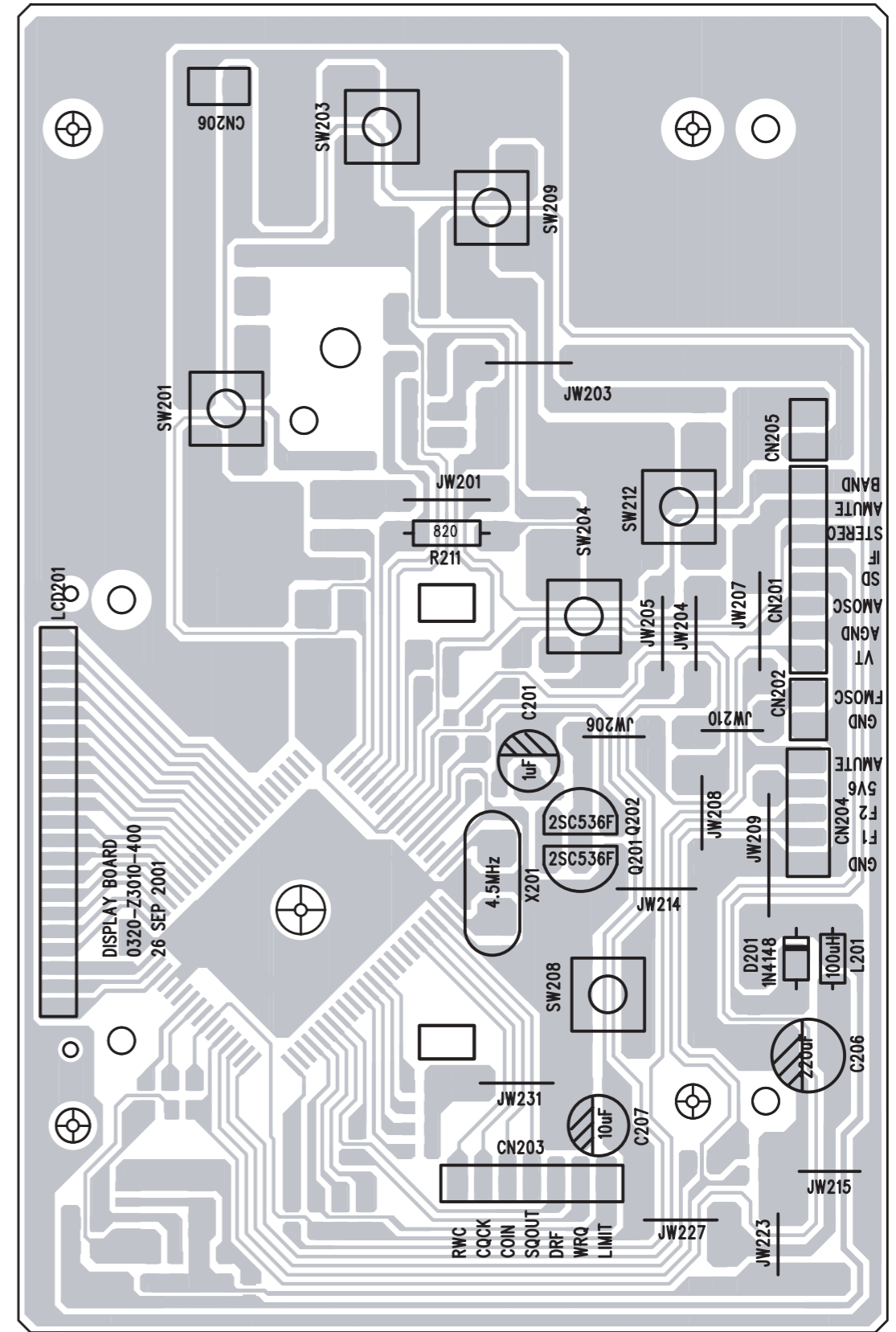
VERSION	17	00C	01
R211	0 OHM	1K5	820



FRONT BOARD - LAYOUT DIAGRAM

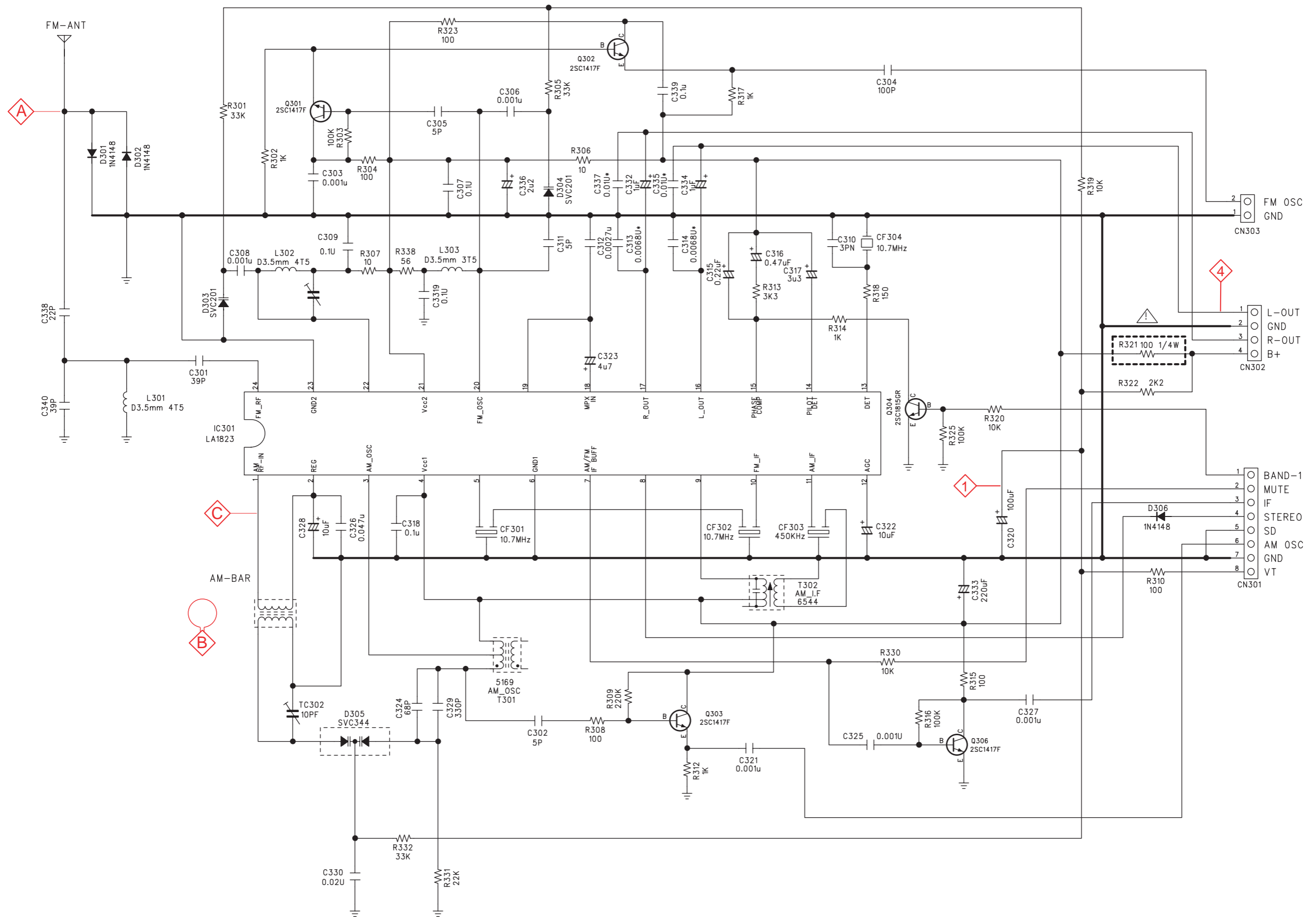


SOLDER SIDE

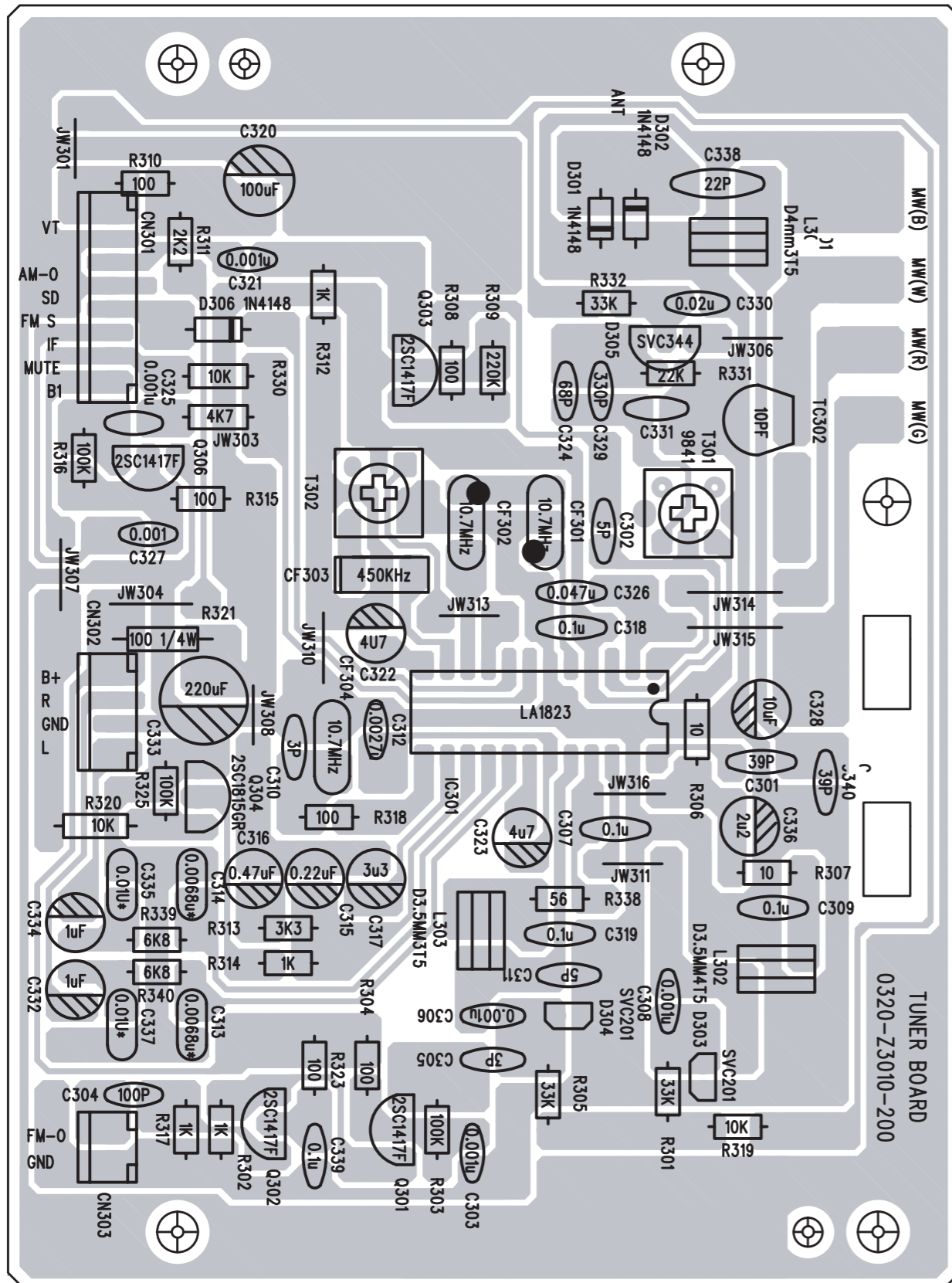


COMPONENT SIDE

# ER BOARD - CIRCUIT DIAGRAM



TUNER BOARD - LAYOUT DIAGRAM



TUNER ADJUSTMENT TABLE

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<i>VARICAP ALIGNMENT</i>						
<b>FM</b> 87.5 - 108MHz			108MHz	L303	1	4V - 0.2V
			87.5MHz	check		0.9V - 0.2V
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	T301	1	3.4V - 3.5V
			530kHz	check		0.6V - 0.7V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	T301	1	3.6V - 3.7V
			531kHz	check		0.6V - 0.7V
<i>FM IF</i>						
<b>FM</b>						
<i>FM RF</i>						
<b>FM</b> 87.5 - 108MHz	108MHz	A mod=1kHz Δf=-22.5kHz	108MHz	L302	4	MAX
	87.5MHz		87.5MHz			
<i>AM IF</i>						
<b>MW</b>	450kHz	C Δf=-10kHz V <sub>RF</sub> = 0.5mV (as low as possible)	558kHz (or 560kHz)	T301	4	
<i>AM RF</i>						
<b>MW</b> FM/MW-version, 9kHz grid 531 - 1602kHz	1494kHz	B	1494kHz	TC302	4	
	558kHz		MW ferrite coil			
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = -30kHz V <sub>RF</sub> as low as possible	1500kHz	TC302	4	
	560kHz		MW ferrite coil			

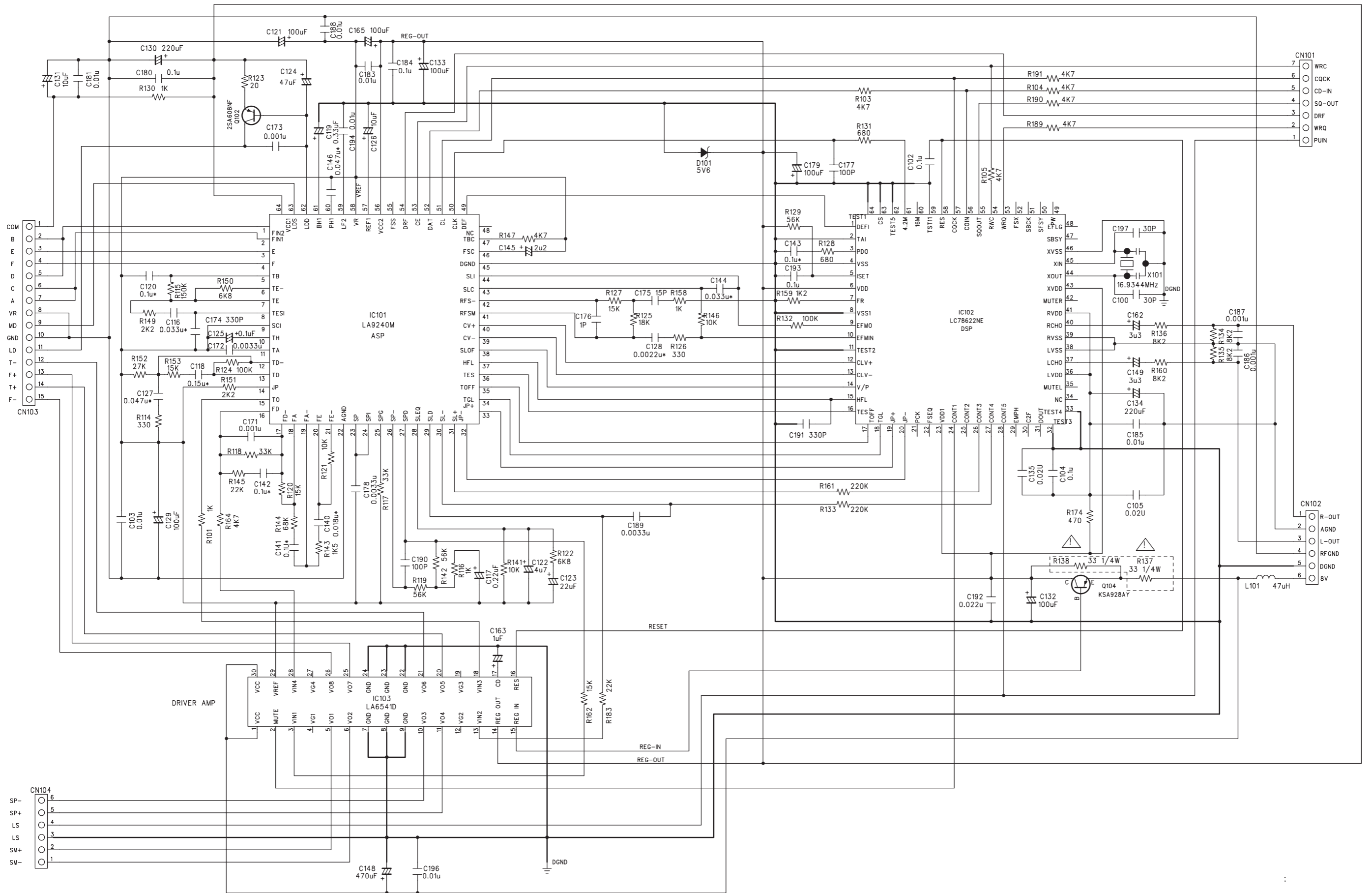
ECO6, general with ferrite antenna, 070799

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

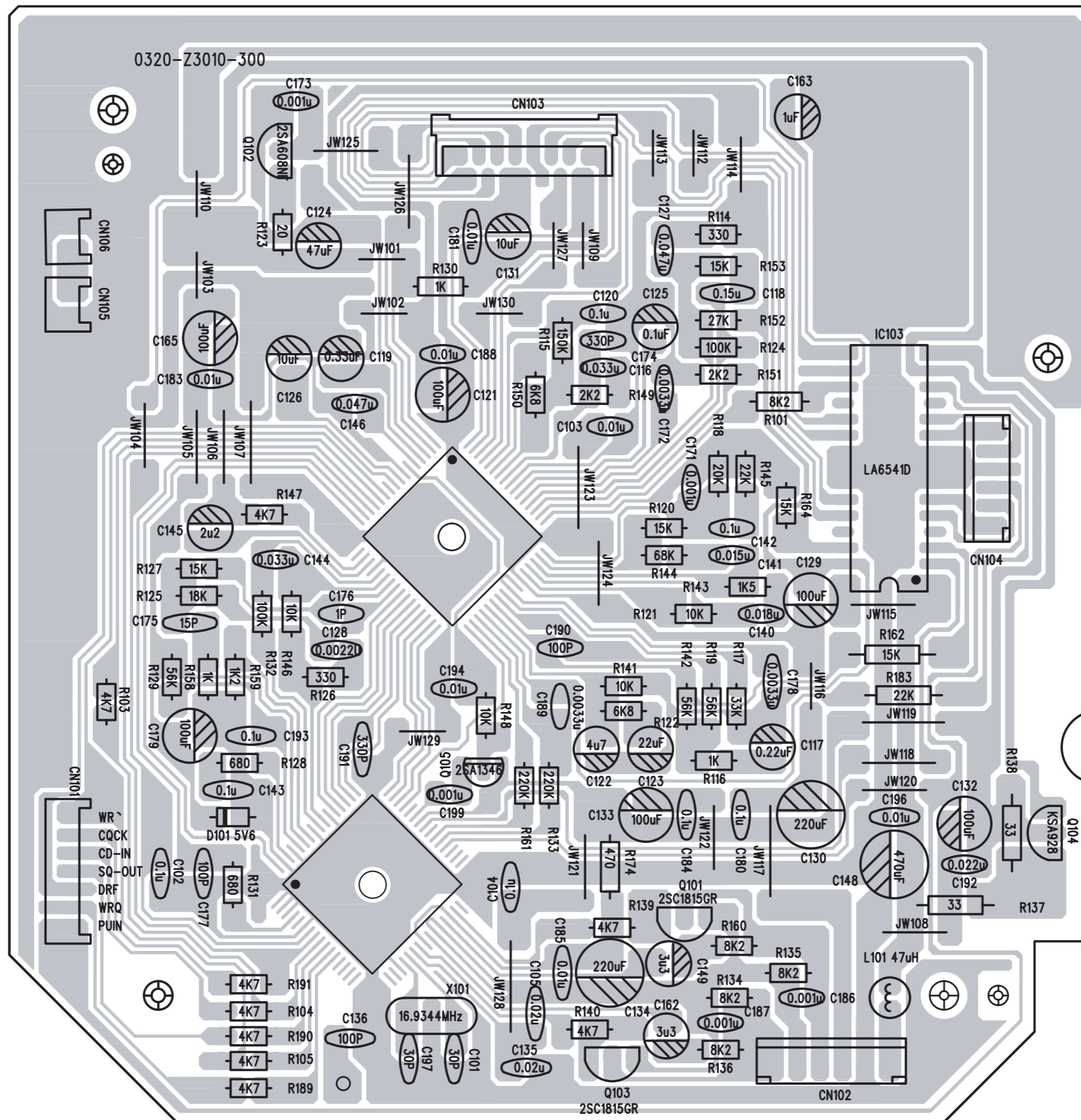
2) RC network serves for damping the IF-filter while adjusting the other one.

↑ Repeat

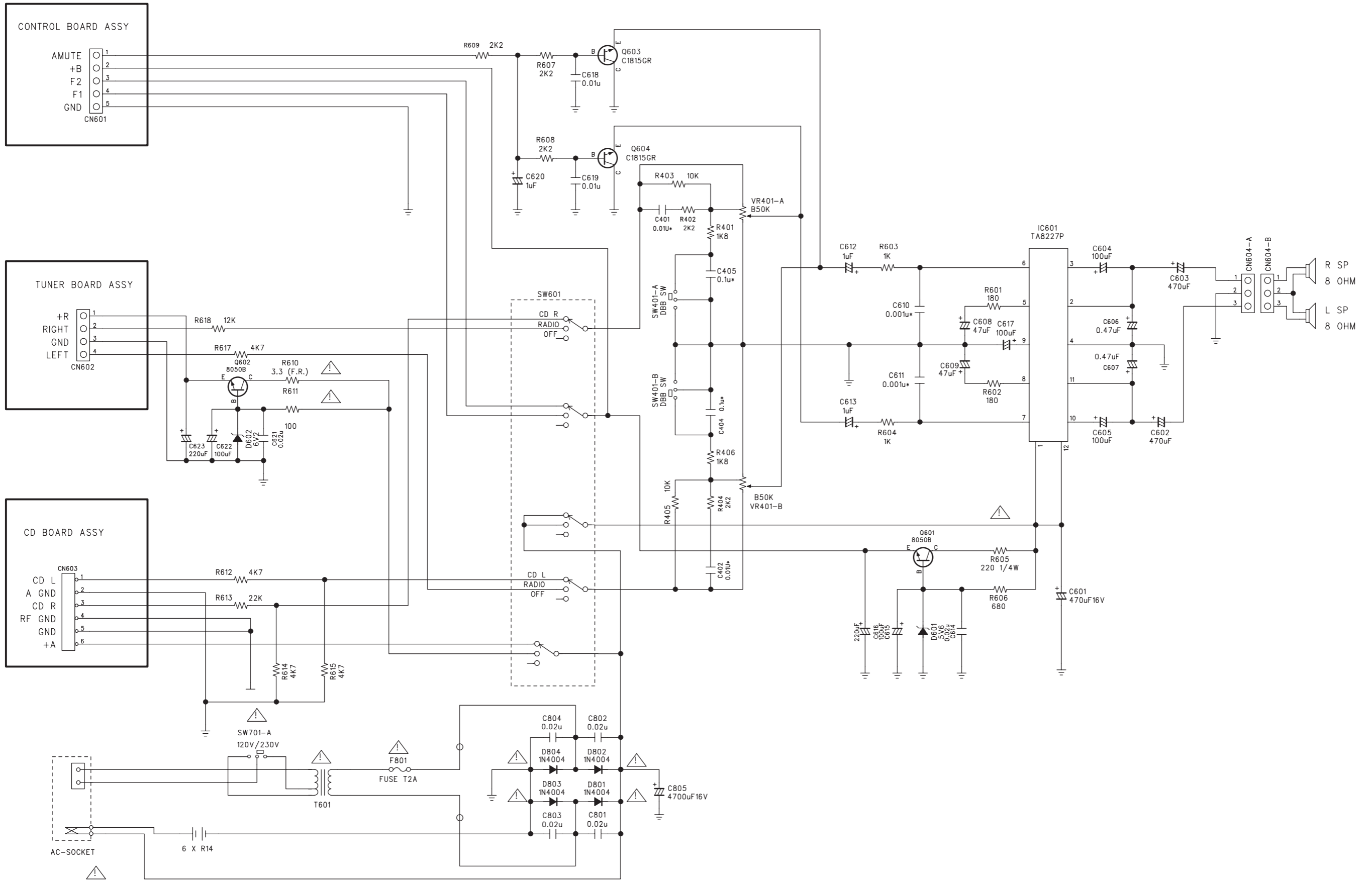
# BOARD - CIRCUIT DIAGRAM



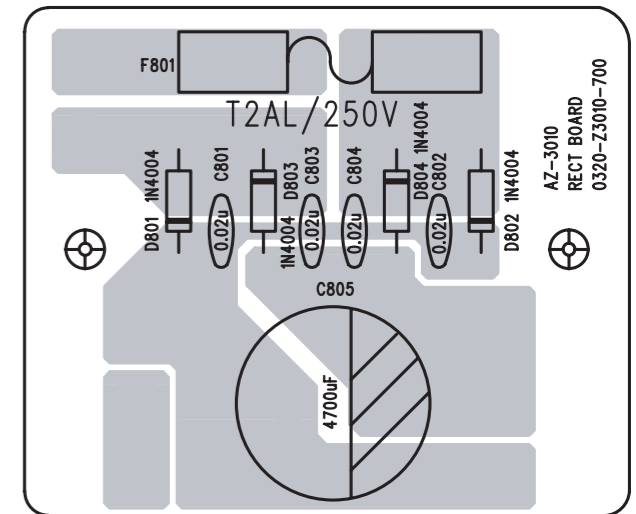
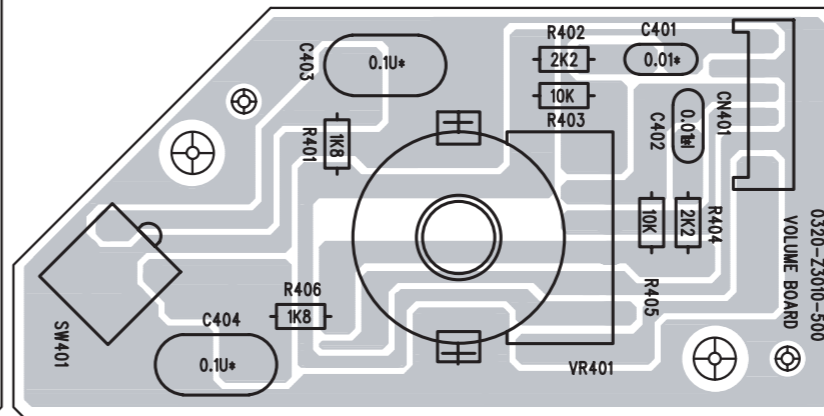
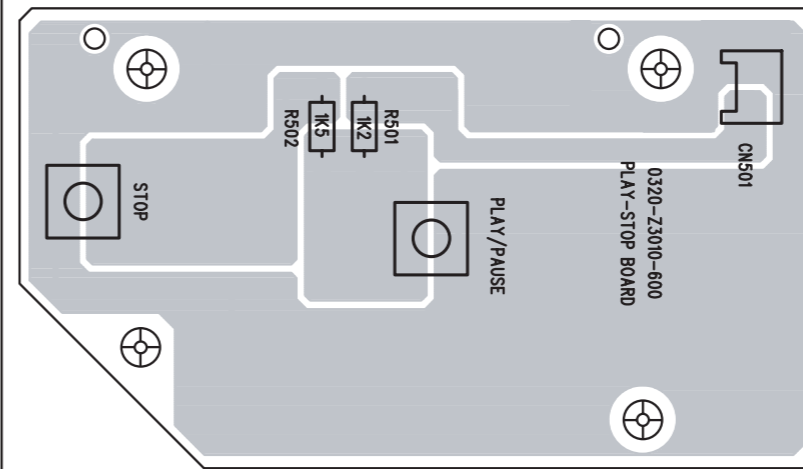
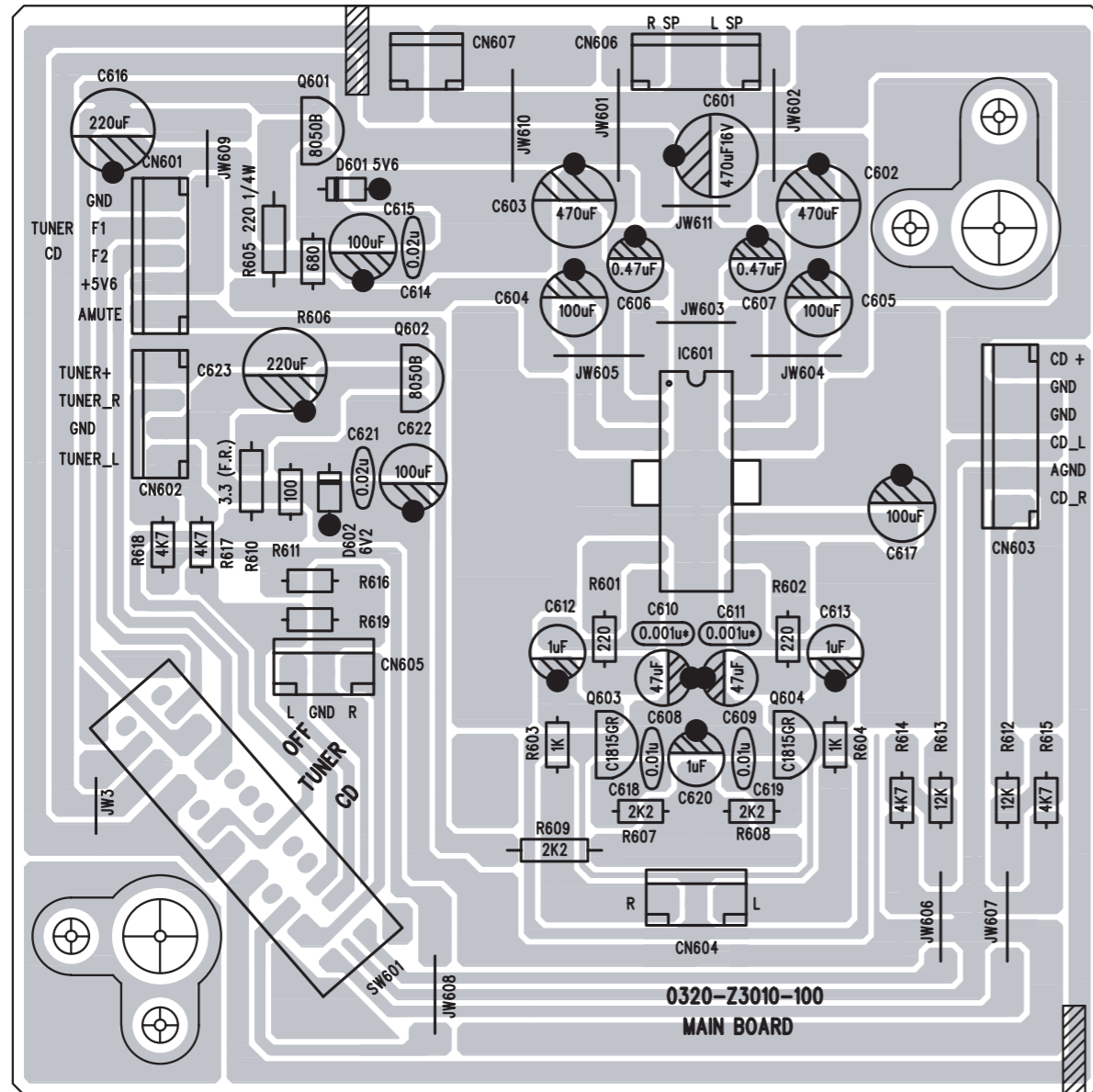
# CD BOARD - LAYOUT DIAGRAM



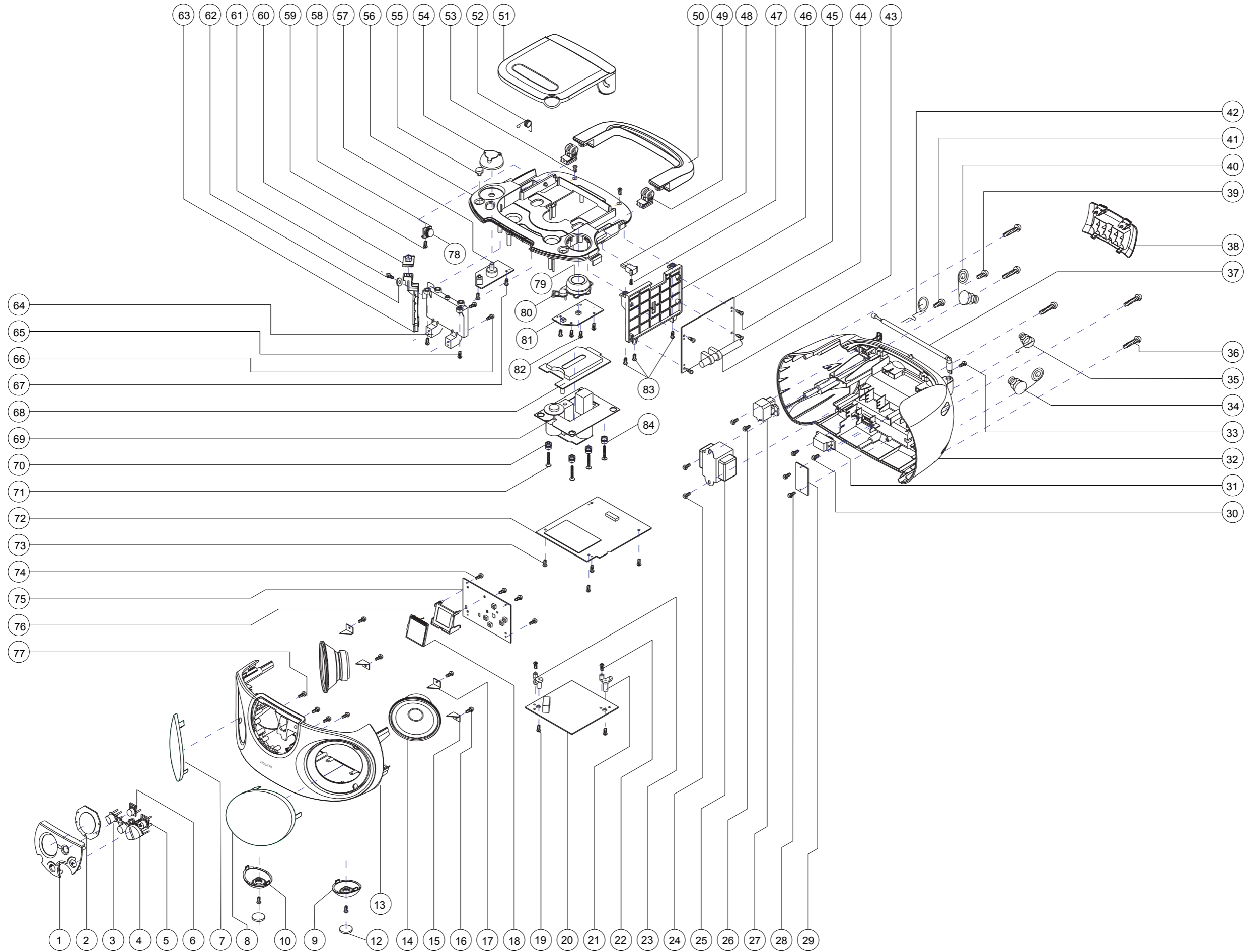
# IO BOARD - CIRCUIT DIAGRAM



# AUDIO BOARD - LAYOUT DIAGRAM



# LODED VIEW DIAGRAM - CABINET





**MECHANICAL PARTSLIST**

1	9965 000 16727	F. CONTROL PANEL (SILVER)
3	9965 000 13407	FUNCTION KNOB
4	9965 000 13409	CD SEARCH +/-KEY
5	9965 000 13408	TUNING UP KNOB
6	9965 000 13410	BAND KNOB
9	9965 000 17064	FEET-RIGHT (BLUE) AZ3014
9	9965 000 16730	FEET-RIGHT (ROSE BLACK)
10	9965 000 17063	FEET-LEFT (BLUE) AZ3014
10	9965 000 16729	FEET-LEFT (ROSE BLACK)
12	9965 000 11807	RUBBER FOOT STAND
13	9965 000 17057	FRONT CABINET (BLUE) AZ3014
13	9965 000 16722	FRONT CABINET (RED PEARL)
32	9965 000 16723	REAR CABINET (BRIGHT SILVER)
34	9965 000 11810	BATT. CONTACT SPRING (+/-)
35	9965 000 11809	BATT. CONTACT SPRING (-VE)
37	4822 303 14022	AERIAL TELESCOPIC
38	9965 000 16728	BATTERY DOOR (BRIGHT SILVER)
40	9965 000 11810	BATT. CONTACT SPRING (+/-)
42	9965 000 11808	BATT. CONTACT SPRING (+VE)
49	9965 000 08532	HANDLE BRACKET
50	9965 000 17060	HANDLE (BLUE) AZ3014
50	9965 000 16726	HANDLE (RED PEARL)
51	9965 000 17058	CD DOOR (PEARL MILKY) AZ3014
51	9965 000 16724	CD DOOR (WHITE TRANSP)
52	9965 000 04923	CD DOOR SPRING
54	9965 000 11797	VOLUME KNOB (SILVER)
55	9965 000 11800	DBB KNOB (BRIGHT SILVER)
55	9965 000 17061	DBB KNOB (BRIGHT SILVER) AZ3014
56	9965 000 17059	CD TRAY (BLUE)3014
56	9965 000 16725	CD TRAY (RED PEARL)
58	9965 000 11804	CD DOOR GEAR HOLDER
60	9965 000 17062	SOURCE SELECT KEY (BLUE) AZ3014
60	9965 000 11801	SOURCE SELECT KEY (GREEN)
63	9965 000 11805	SWITCH LEVER
68	4822 442 01905	LENS COVER
69	3103 309 05360	CD DA11B1N DRIVE ASSY
70	4822 529 10387	DAMPER - RUBBER (40 DEG)
76	9965 000 11806	LCD BRACKET
78	9965 000 04921	CD DOOR GEAR
79	9965 000 11798	PLAY/PAUSE KEY (BRIGHT SILVER)
80	9965 000 11799	STOP KEY (BRIGHT SILVER)
84	4822 529 10386	DAMPER - RUBBER (30 DEG)

**ELECTRICAL PARTSLIST - COMBI BOARD****- CAPACITORS -**

TC301	9965 000 11821	10 PF TRIMMER CAP.
TC302	9965 000 11821	10 PF TRIMMER CAP.

**- RESISTORS -**

VR401	9965 000 11838	ROTARY VOL. B50K
-------	----------------	------------------

**- COILS & FILTERS -**

ANT3	9965 000 11811	AM ANT COIL
CF301	9965 000 11812	CER.FILTER LT10.7M
CF302	9965 000 11812	CER.FILTER LT10.7M
CF303	9965 000 11813	CER. FILTER SFU 450Y
CF304	9965 000 11814	CER.FTR CDA10.7MG1-A

L201	9965 000 11830	FXD INDUCTOR 100UH
L301	4822 157 71571	BFP A-258A PI-03-014
L302	9965 000 11817	FM COIL 3-1/2T
L303	4822 157 71567	FM COIL 2-1/2T
T301	9965 000 11819	AM OSC COIL

T302	9965 000 11820	AM IFT (YELLOW)
X101	9965 000 10692	CER. RES. 16.93 MHZ
X201	9965 000 11833	CRYSTAL 4.5 MHZ

**- DIODES -**

D201	4822 130 30621	1N4148
D301	4822 130 30621	1N4148
D302	4822 130 30621	1N4148
D303	4822 130 62625	SVC201SPA
D304	4822 130 62625	SVC201SPA

D305	9965 000 11815	SVC344
D306	4822 130 30621	1N4148
D601	9965 000 11835	ZENER 5.6V 1/2W
D602	9965 000 11836	ZENER 6.2V 1/2W
D801	5322 130 34574	1N4004G

D802	5322 130 34574	1N4004G
D803	5322 130 34574	1N4004G
D804	5322 130 34574	1N4004G

**- IC & TRANSISTORS -**

IC101	9965 000 11823	LA9241M
IC102	9965 000 11824	LC78622N/E
IC103	4822 209 15786	LA6541D
IC201	9965 000 11828	LC72336-9A83 (AZ3010)
IC202	9965 000 11829	BR24C02FW EPROM

IC301	9965 000 11816	LA1823
IC601	4822 209 31544	TA8227P
Q102	9965 000 11825	2SA608NF-NPA-AT
Q104	9965 000 11826	KSA928AY
Q108	4822 130 43026	2SA1346

**- IC & TRANSISTORS -**

Q201	9965 000 11831	2SC536F
Q202	9965 000 11831	2SC536F
Q301	9965 000 11818	2SC1417F
Q302	9965 000 11818	2SC1417F
Q303	9965 000 11818	2SC1417F

Q304	4822 130 41319	2SC1815BL
Q305	4822 130 41319	2SC1815BL
Q306	9965 000 11818	2SC1417F
Q601	4822 130 63422	8050B
Q602	4822 130 63422	8050B

Q603	4822 130 41319	2SC1815BL
Q604	4822 130 41319	2SC1815BL

**- SWITCHES -**

SW201	9965 000 11832	TACT SWITCH
SW203	9965 000 11832	TACT SWITCH
SW204	9965 000 11832	TACT SWITCH
SW208	9965 000 11832	TACT SWITCH
SW209	9965 000 11832	TACT SWITCH

SW212	9965 000 11832	TACT SWITCH
SW401	4822 276 13972	PUSH SWITCH
SW501	9965 000 11832	TACT SWITCH
SW502	9965 000 11832	TACT SWITCH
SW601	9965 000 11837	SLIDE SWITCH SST-63D01

**- MISCELLANEOUS -**

F801	△ 4822 070 32001	FUSE 218.200(200MA)
	9965 000 11822	M10 X 60 AM FERRITE BAR
	9965 000 11827	FFC CABLE 15 PINS 85MM
	9965 000 16731	LCD DISPLAY
	9965 000 11839	SPEAKER 3" (77MM)

	△ 9965 000 08577	AC SOCKET TC08-115-02
	△ 9965 000 11840	TRANSFORMER EI41 230V
	△ 2422 070 98151	MAINS CORD (EUR)
	△ 4822 321 11199	MAINS CORD (UK)

**Note:** Only these parts mentioned in the list are normal service parts.